

Global First Power

2023 Virtual Open House Transcript

November 29, 2023



0:07 – MC: Annalisa Barnett, Communications Manager

Good evening everyone. Thank you for taking the time to join us tonight. My name is Annalisa Barnett and I'm the communications manager for Global First Power. I'm happy to be your host for this virtual open house. This is the fifth open house hosted by GFP since 2020. These events are one of the ways we engage with you – our stakeholders – and, for that reason, they are absolutely critical to this project. Our aim is to keep you up to date about the project, and to hear your views and perspectives.

Before we get started, a couple of housekeeping notes. Tonight's session is being conducted in English. However, we can respond in French as well. In addition, the presentation slides and a full transcript of tonight's session will be available in English and French on our website in the coming week or so. Finally, please also note that the event is being recorded.

Agenda & speakers



About GFP & the project
Jos Diening
President and CEO



About the project
Kaela Esseghaier
Project Director



Licensing
Jordan Black
Licensing Director



Project update
Patrick Greer
Manager - Design Engineering



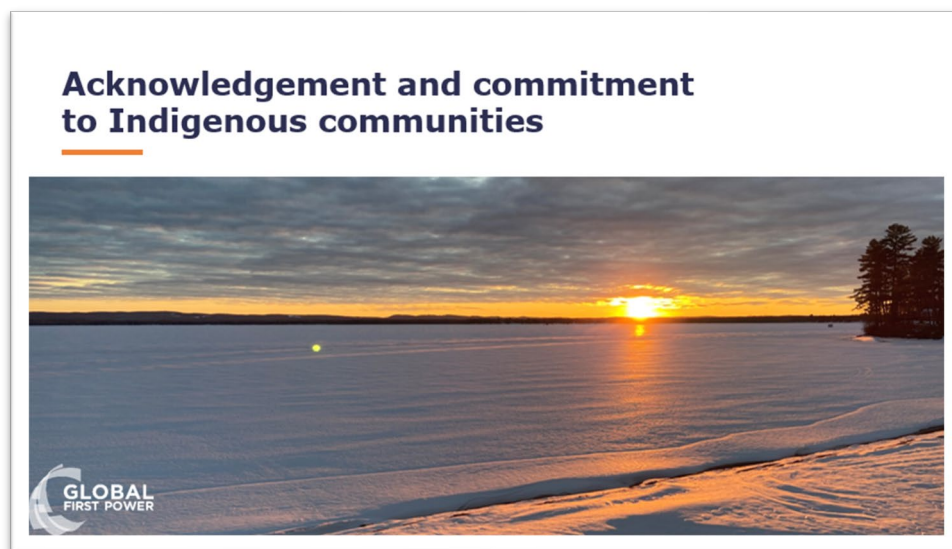
1:04 – MC: Annalisa Barnett, Communications Manager

So let's take a look at the agenda for tonight. To begin, our President and CEO, Jos Diening will give an overview of Global First Power and the proposed project.

We'll follow that with a detailed discussion of the project by our Project Director, Kayla Esseghaier, Patrick Greer, our Manager of Design Engineering, will take us through the latest updates to the project. And finally our Licensing Director, Jordan Black will talk about the licensing process and where we're at with that.

After the presentations, we have reserved a significant portion of time for question and answers. So to participate, you should see a Q and A area on the right side of your screen. So use that area to enter your questions at any time and we will come back to them during the Q&A portion of the event.

So now I would like to turn it over to our first speaker, President and CEO, Joss Diening.



2:02 – Jos Diening, President and CEO

Thanks, Annalisa, and thanks again to everyone for joining us tonight. To start, it is important that we begin by acknowledging where we are. Our team is coming to you tonight from the town of Whitby, which is situated on the traditional territory of the Mississaugas of Scugog Island, First Nation and signatories of the Williams Treaties.

Our proposed project site at Chalk River is located on the unceded Algonquin and Anishinaabe territory. We recognize the people and the lands of the Algonquin and Anishinaabe Nation, as well as all First Nations, Inuit and Metis peoples' valuable past and present contributions to this land.

GFP is committed to building mutually beneficial working relationships with Indigenous Nations and communities, as well as engaging with all Indigenous Nations and communities with Aboriginal and Treaty rights, and any community with interest in our project.

Engaging with Indigenous communities is core to our company and our project, and we greatly appreciate the time we have spent with community members and the traditional knowledge of the land that they have shared with us.

Global First Power: Who we are

- Canadian company
- Jointly owned by Ontario Power Generation and Ultra Safe Nuclear Corporation
- Small but dedicated team
- Based in Ontario



3:15 – Jos Diening, President and CEO

So I'm going to start talking a little bit about who we are and, so, I know some people on this call have been on this journey with us for several years. And for those who are new, Global First Power is a joint venture between Ontario Power Generation and Ultra Safe Nuclear Corporation, or USNC for short.

I know many have heard of Ontario Power Generation. They operate a fleet of generating assets across the country, or across the province, and in the United States, and they really help us with our operations, our licensing as well as our Indigenous engagement. USNC is a fuel manufacturing as well as technology company and we will be building their reactor.

So we are a Canadian company. We're a small, dedicated team of 40 individuals. Our head office tonight is in Whitby, but we have remote workers across the province as well as two permanent employees that are situated in the Ottawa Valley.



What we're doing

- Building Canada's first micro-modular reactor (MMR)
- Designed by USNC
- New, innovative technology
- Alternative to fossil-fuel generation

4:16 – Jos Diening, President and CEO

So really what we're trying to do is we want to build then operate the first, then many, micro modular reactors, or MMR for short. You've probably heard of the term SMR, or small modular reactors, in the

news. A lot of companies and communities are looking to build SMRs to provide an alternative to fossil fuel and really help them achieve their net zero commitments. So an MMR is really just a small SMR.


Our MMR is designed by USNC. USNC is a Seattle based company. That's where their headquarter is. But they have offices around North America and they have projects around the world.




Why build an MMR?

MMRs can play a role in addressing climate change and energy access issues by:

- Helping to decarbonize remote industrial activities and energy-intensive operations like data centres
- Providing an alternative to diesel for remote communities

»» 1 MMR could replace 1.2 B litres of diesel





4:59 – Jos Diening, President and CEO

So why do we want to build an MMR? So if the technology can be proven and commercially deployed it has the potential to help address serious urgent issues like climate change, energy security and energy equity.

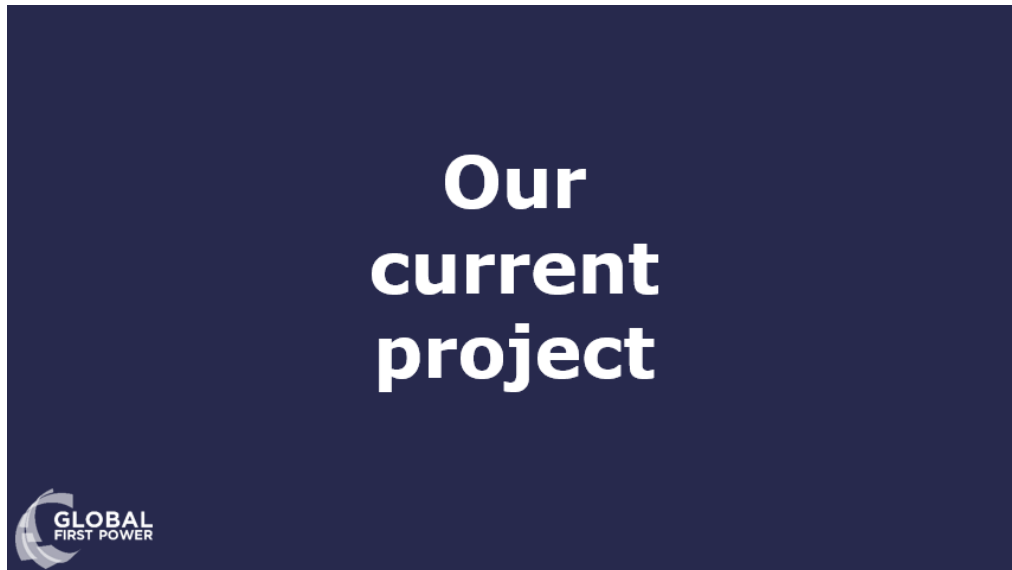
We know that climate change is one of the biggest challenges facing the world today and an all-hands-on-deck approaches required. We really need every tool in the toolbox to address it. Some may be aware that the biggest climate conference in the world is starting tomorrow, COP 28, and if you look at the agenda, SMR development and deployment is a major item on the list this year. It is one of the most promising technologies that we can use in the fight against climate change.

Our MMR was originally focused on remote communities, but it has the potential to decarbonize many other things like data centres, mining operations, district heating facilities and many other industrial processes.

Energy equity is another big challenge that needs a solution, particularly in Canada. Our northern remote communities do not enjoy the same standard of living as on-grid connected communities. Energy there is less abundant, less reliable and more expensive and usually only available in the form of diesel. A solution like an MMR could solve these issues, and as a Canadian company we are very interested in being part of the solution. A community with an MMR could reduce their reliance on diesel, they could have an abundance of energy to add useful infrastructure to the community. An example of this is a greenhouse where they could grow their fruits and vegetables locally instead of having them shipped or flown in.

So when we look at the potential for this technology, we see the opportunity for a lot of positive impact. But to make any of that happen, we first need a demonstration project to, firstly, show how our MMR works, help us have a better understanding of the cost and really help companies and communities decide if our product is a good option for them. And that's really what Chalk River is all about.

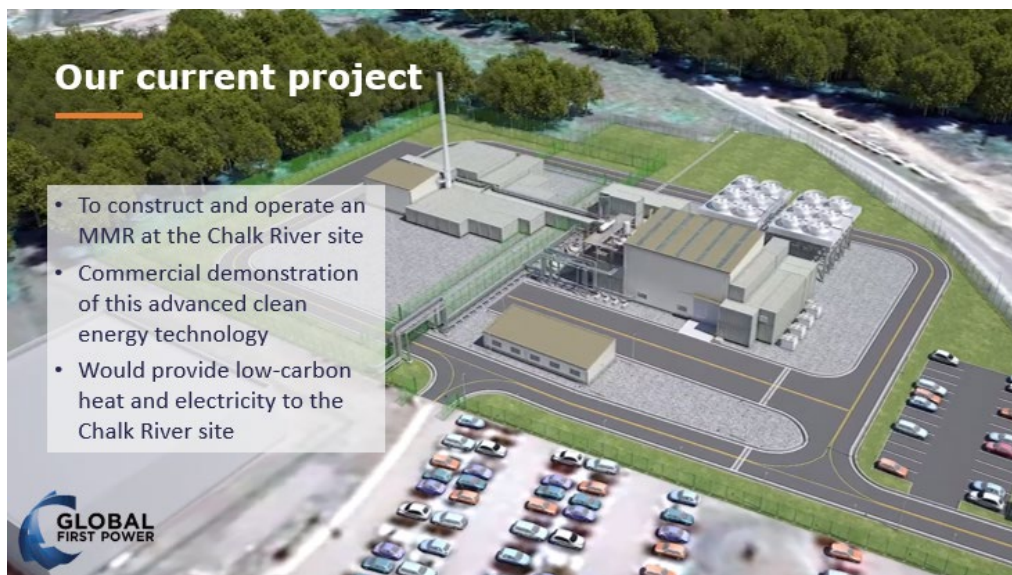
So we have a team of excited and passionate nuclear professionals that can't wait to share our project with you. So I'll turn it over to Kayla to talk a little bit more specifically about Chalk River.



7:26 – Kaela Esseghaier, Project Director

Merci Jos. Et juste avant de commencer avec les informations de base sur le projet, je tiens à souhaiter la bienvenue à nos participants francophones et à préciser que nous répondrons aux questions en français à la fin de notre présentation.

I will provide a bit of background on our project, its location and timelines.

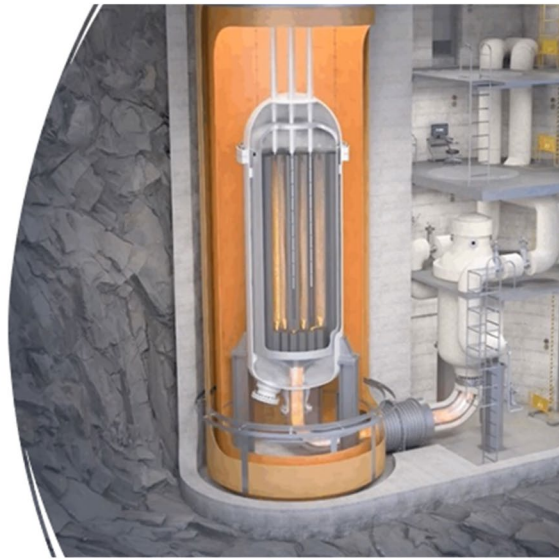


7:49 – Kaela Esseghaier, Project Director

So GFP's goal is to construct and operate Canada's first micro-modular reactor. Our project will serve as a commercial demonstration for the MMR's advanced clean energy technology and to demonstrate its potential to support Canada's climate change goals. Once it is operational, the MMR would provide low-carbon heat and electricity to Chalk River and contribute to the site's net zero emissions plan.

About the MMR

- Smaller, more advanced version of traditional nuclear reactors
- Advanced, passive safety systems
- Minimal operations and maintenance requirements
- Scalable and modular – can suit different site/energy needs
- Based on proven technology in use for several decades in countries like the U.S., Germany, Japan and China.



8:16 – Kaela Esseghaier, Project Director

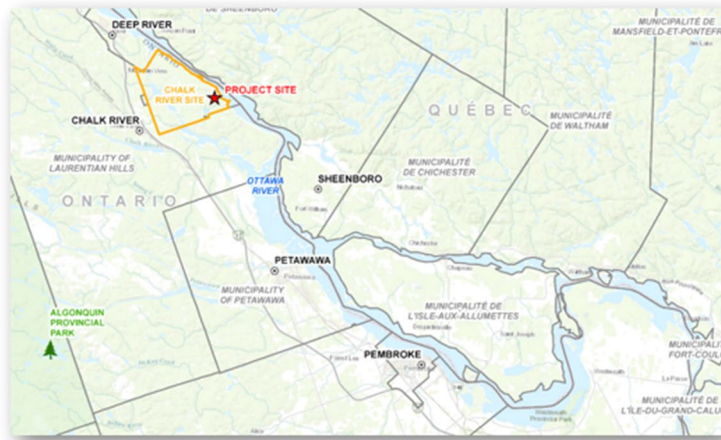
So now I'll talk a little bit about the MMR itself.

The MMR is a fourth-generation nuclear energy system that delivers safe, clean, cost-effective energy. Fourth generation simply refers to a new class of reactors that are smaller, more advanced versions of traditional nuclear reactors. They incorporate advanced materials, designs and safety systems, and are designed to be more economical, flexible and scalable.

Ours, in particular, is a high temperature gas cooled reactor that can output 45 megawatts of thermal energy. It uses a molten salt system to transport the heat it generates to the adjacent plant which houses power generating equipment similar to what you'd see at a large nuclear or natural gas station. This is where the heat is converted to electrical power and/or process heat depending on what our client, in this case CNL, tells us that they need. Our plant can output 45 megawatts of thermal energy or up to 15 megawatts of electricity, or some combination thereof.

And while this is a new design, it is based on proven technology that has been in use for several decades. The US and Germany built their first high temperature gas reactors starting in the 1960s through to the late 1980s, and China and Japan have been operating different versions since roughly the year 2000.

Project location



9:34 – Kaela Esseghaier, Project Director

So now we'll get into our project location. The project is located on the Chalk River site in Renfrew County, Ontario on the southwest shore of the Ottawa River. It is federal land owned by Atomic Energy of Canada Limited, abbreviated as AECL, and the site is operated by Canadian Nuclear Laboratories, abbreviated as CNL.

The Chalk River has been operating as a nuclear site for a long time, since 1944, and has hosted nuclear projects and research that have established Canada as a leader in developing nuclear technology for peaceful and innovative applications.

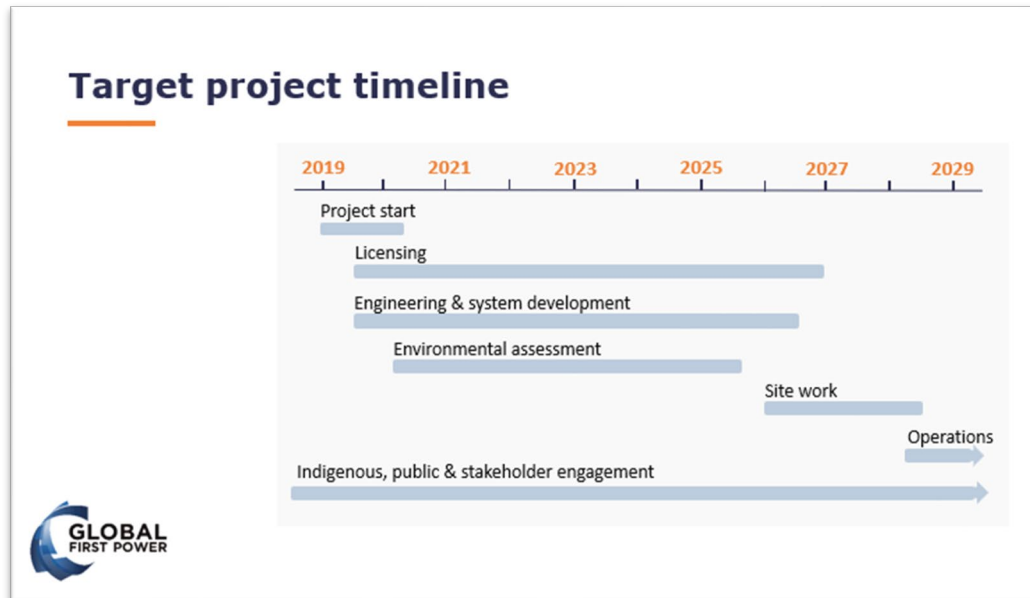
Project location

The project site consists primarily of an employee parking which is bordered by an adjacent wooded area



10:11 – Kaela Esseghaier, Project Director

We'll zoom in a little bit closer here to our site's location. We're located within the Chalk River site on the CNL campus. Our project will be located on an existing parking lot which is bordered by a wooded area to its east, and you can see this in the photo just to the right here.



10:30 – Kaela Esseghaier, Project Director

So a little bit about our project, the target timeline. Our project kicked off in 2019 at which point engagement with our Indigenous rights holders as well as other projects stakeholders began right from the onset of project.

The licensing, engineering and environmental scopes are well underway at this time, and we are targeting a 2028 project completion, at which time operation of the plant will commence.

So I'm going to hand it off to Patrick Greer to give us an update on the project.


Project update

11:04 – Patrick Greer, Manager – Design Engineering

OK, thanks very much, Kayla. So again, I'm Patrick Greer. I am a design manager here at Global First Power and I'm really happy to be able to share with you a number of technical changes in the design of the MMR that have been made since our last open house. In this update I will cover both the changes to the design as well as some of the things that drove them.

MMR design updates – overview

»» The inherent safety features are maintained and supported by these updates to the design



	Original design	Updated design
Output	15MW thermal 5MW electrical	45MW thermal Up to 15MW electrical
Service life	20 years	Up to 40 years
Refueling	No	Yes
Fuel assembly	Indirect cooling	Direct cooling
On-site fuel storage	No	Short-term
Core shielding	Yes	Yes Increased capability

11:28 – Patrick Greer, Manager – Design Engineering

To kick things off, here is a brief overview of the major changes that have been made to the MMR. I will get into more detail on these changes in the coming slides but do want to draw your attention to the energy output of the reactor—which has tripled—and the service life which has also been improved from 20 years to 40 years.

To enable these improvements, refueling capabilities were introduced and changes to the fuel design and core shielding were required. This included the introduction of a larger neutron reflector to improve the efficiency of the fission process, and results in fewer activation products and, by extension, even less dose to people and the environment.

As I talk about each of the changes on the upcoming slides, it's important to keep in mind that the inherent features of the MMR are maintained and supported by these updates. This means that the design still includes advanced passive safety systems and it remains both scalable and modular.

MMR design updates – uprating

Uprating from 15 MWt to 45 MWt

- Meets broader market demand for greater electrical and heat output
- Improved economics
- Can be designed with operating capacity flexibility, depending on application requirements



12:31 – Patrick Greer, Manager – Design Engineering

So when we look at the uprate, really, if it's if it's meant to be micro, then why uprate?

So, updates in the design were largely driven by market data which showed that there is demand for greater amounts of both electrical and heat output across a number of applications.

Aside from servicing the market demand, uprating from 15 megawatts thermal to 45 megawatts thermal also improves the economics of the reactor design. This allows for a reduced levelized cost of electricity and is ultimately better for the consumer.

The MMR can be designed with operating capacity flexibility depending on application requirements – in other words, you can use the output of the reactor as a heat source for things like district heating, process heating, desalination, hydrogen production, electricity generation and more. You can also combine these applications, as is the case for Chalk River, where we are looking to provide both process heat and electricity.

And, true to the fundamentals of a small modular reactor, it's also scalable, meaning that the design can be changed for other projects to operate as low as 10 megawatts thermal and up to 45 megawatts thermal.

MMR design updates – lifespan

Operating life of the facility has increased from 20 to 40 years



Aligns with
industry practice



Supports economics



Enabled by introducing fuel
handling equipment and
the ability to refuel



13:47 – Patrick Greer, Manager – Design Engineering

Taking a quick look at our lifespan change in the design updates, the operating life of the facility was improved from 20 years to 40 years. With the introduction of refueling, this made a lot of sense in that we are no longer constrained by how long a single fuel load will last. This leads to better utilization of plant equipment and site infrastructure where you are using more of its useful life prior to decommissioning.

In industry today, you are seeing a lot of power-producing facilities opting to do mid-life refurbishments as a more cost-effective means to support the power needs of society. For us, we're planning for the long term right from the start which really aligns with where the industry is going and ultimately improves the return on investment for the facility.

At the end of the day, this increased lifespan will benefit rate payers by reducing the levelized cost of electricity and providing energy security for longer.

MMR design updates – defueling/refueling

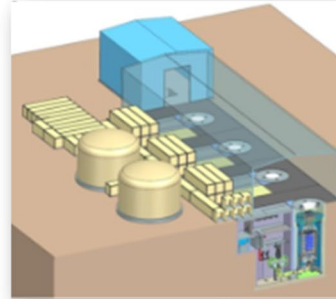
The reactor will require periodic refueling

Refueling requires temporary on-site storage of:

- New, incoming fuel
- Used fuel

Storage plan

- Is fully secure and in line with industry practice (fuel is transferred from the reactor's core barrel to a fueling machine to dry storage casks)
- Fuel is housed within reactor services building and maintenance enclosure
- Continuing to develop a longer-term storage plan with industry partners to integrate with existing storage facilities



14:51 – Patrick Greer, Manager – Design Engineering

So to enable the increased output and longer lifespan, defueling and refueling is now required. This will also require new, incoming fresh fuel as well as spent fuel to be temporarily stored on site.

So what are these refueling activities going to look like? Taking a look at the image on the right, the fueling machine will be mounted on rails and will traverse between the maintenance enclosure (which you can see in the image in blue) and the reactor services building which is over top of the reactors which are below grade. For illustrative purposes, a station design featuring four reactors is shown in the image, for which one fueling machine would be used to service all four, or in the case of Chalk River, just one.

For defueling, the fueling machine will be positioned over top of the reactor and fuel will be unloaded from the reactor core into a series of flasks which are taken to the maintenance enclosure to await transportation to the interim storage site.

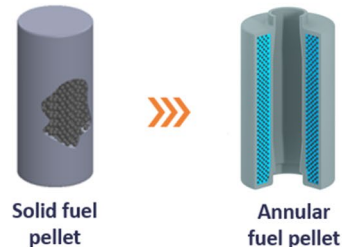
For refueling, fresh fuel is picked up by the fueling machine in the maintenance enclosure and then loaded into the reactor core. Upon concluding the refueling outage, the reactor will be returned to high power and will run continuously until the next refueling outage which will be scheduled based on fuel usage. The rate of fuel usage will vary based on the type of fuel used as well as consumer demand for heat or electrical.

MMR design updates – fuel

Changing the fuel design and how the fuel is cooled enables the uprating without significantly changing the design or size of the reactor core

The changes result in:

- A reduction of thermal stresses in the fuel at a higher power density
- Better transfer of heat
- Higher power from the fuel with a similar volume
- Lower fuel temperature to achieve the same thermal operating temperatures



16:21 – Patrick Greer, Manager – Design Engineering

Now, another key ingredient to enabling the increased output of the reactor was updates to the fuel design itself.

The original design was the solid fuel pellet that you can see in the image on the left. With this design, heat was transferred from the pellet indirectly to the helium coolant through the graphite moderator. In the design, which you can see in the image on the right—the annular fuel pellet design—the helium coolant comes in direct contact with the fuel pellet to remove the heat. Now, as a result of this, the cooling of the fuel is more efficient and the fuel itself does not need to get as hot to be able to transfer the same amount of heat.

With this change to the fuel, there were some additional benefits realized including the fact that the volume of fuel required in the core was slightly reduced, and stresses in fuel were reduced, adding even more safety margin to the fuel design.

So these changes were enabled by our unique fuel fabrication methodology that uses 3D printing to produce the patented fully ceramic micro-encapsulated fuel, or FCM fuel. And without the use of this technology, a change of this nature would have been significantly more complex and may not have actually been possible.

So with that, I'll turn it over to our Licensing and Environment Director, Jordan Black, to take you through an environmental assessment and licensing update.

Environmental Assessment and Licensing



17:53 – Jordan Black, Licensing Director

OK, thank you, Patrick. So as mentioned, my name is Jordan Black and I'm GFP's Licensing and Environment Director. Tonight I'll be providing an overview of the licensing process and an update on where we are in that process, as well as our Environmental Assessment.

Licensing – overview

Regulated by:
Canadian Nuclear Safety
Commission (CNSC)

Our project: Class I facility



5 licences:
- Site preparation
- Construction
- Operating
- Decommissioning
- Abandonment



Environmental assessment:
Reviews entire lifecycle of the project



Stakeholder engagement:
Required throughout project lifecycle; critical for project success



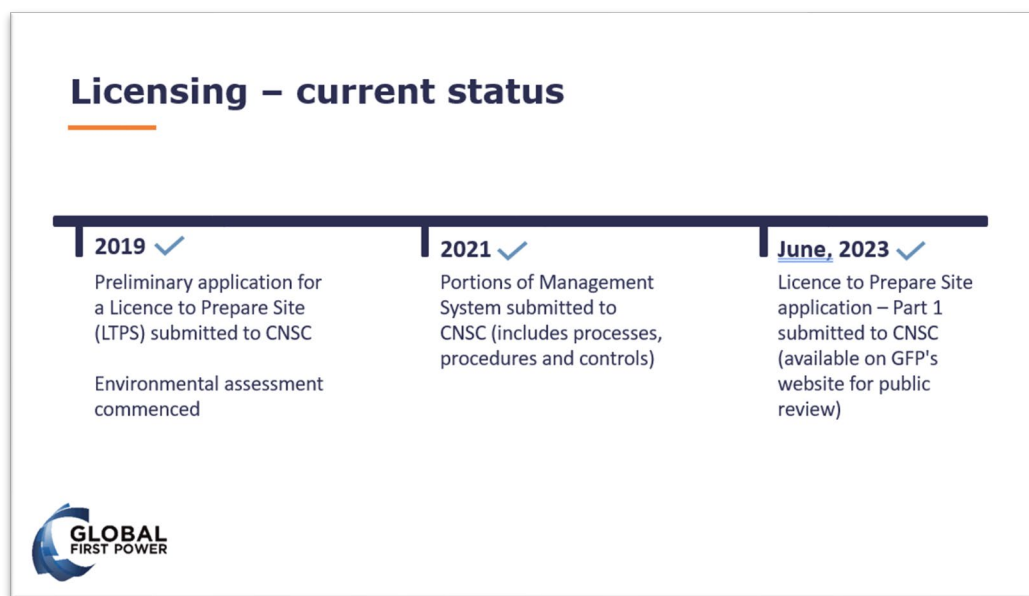
18:09 – Jordan Black, Licensing Director

I'll start with some of the basics. So, in Canada, the use of nuclear energy is regulated by the Canadian Nuclear Safety Commission—or the CNSC for short. GFP's project is a class 1 nuclear facility and, as such, is subjected to the laws and regulations applicable to this class of reactor. This includes legislation such as the Nuclear Safety and Control Act and all applicable CNSC regulations and REGDOCs.

In particular, these regulations will require our project to obtain five different licenses over its lifespan. So this includes a license to prepare site, a license to construct, then to operate, to decommission and, ultimately, to abandon the site—which means it is returned to its original state.

An environmental assessment is also required as part of the first licensing gate, which is site preparation. However, rather than just looking at this first phase of the project, the environment assessment looks at the whole life cycle of the project and considers elements such as: the impact on the environment, the magnitude of that impact, and the potential ability to mitigate or manage impacts along the way.

A critical component of both the licensing process and the environmental assessment is stakeholder engagement. So it's essential that we engage with members of the public, different levels of government, and with Indigenous Nations and communities along the way. And while engagement is required and will remain important to GFP throughout the whole project's life cycle, we feel it's especially important now at the outset when there is an opportunity to gather feedback and incorporate it into the project plan.



19:51 – Jordan Black, Licensing Director

So, where are we in this process today?

Well, in 2019, GFP submitted to the CNSC a preliminary application for a licence to prepare site, which really kick-started the licensing process. This included submitting a project description which was used by the CNSC to understand the project and provide feedback and direction to GFP so that we could begin the relevant studies that would be required later in the licensing process, and including our environmental assessment.

Since then, GFP has worked to develop what's called a management system, which is the governance that explains how we intend to run the business, and includes things like: the controls we will have in place; how we will meet appropriate regulations; how we plan and do our work, at a high level; and how we will continually improve the way we operate as we learn more. We have continued to submit portions of this management system to the CNSC since 2021.

In June of 2023, earlier this year, GFP submitted the first part of our final application for a licence to prepare site. This 'Part 1' of the application includes much of the non-technical, and is available for review on our website today.

EA underway

- The project is subject to an EA, in accordance with the *Canadian Environmental Assessment Act (CEAA 2012)*
- It must demonstrate the project is not likely to cause significant adverse environmental effects, considering available mitigation measures

»» GFP has been conducting studies and preparing a draft *Environmental Impact Statement (EIS)* since 2021. New EA information will be available in 2024.



21:07 – Jordan Black, Licensing Director

Next, I'll spend a bit of time talking about the environmental assessment process GFP is undertaking for our Chalk River project.

Following the submission of the preliminary site prep licence application in 2019 that I mentioned, the CNSC determined that the project would be subjected to environmental assessment—or an EA—in accordance with the Canadian Environmental Assessment Act, 2012—or CEAA 2012. The EA must demonstrate that the project is not likely to cause significant adverse effects, considering available mitigation measures.

In conducting this EA, the CNSC is the authority responsible for making a decision on whether or not the project may proceed, based on what we've submitted.

The EA process invites participation and input from Indigenous communities and the public as well throughout numerous steps in the process.

Ultimately, the effects of the project will be documented in the Environmental Impact Statement—or EIS. Development of the draft EIS is well underway based on site studies completed over the past few years. We're now evaluating the environmental effects of the project design updates that were made in 2023 that Patrick spoke to earlier, and we plan to include these results in the draft EIS that is submitted to the CNSC for public feedback.

The results of the effects assessment will be presented at the next open house we plan to host in 2024.

Licensing and EA – next steps

2024, Spring

Complete Licence to
Prepare Site application
submitted to CNSC

Environmental Impact
Statement (EIS)
submitted to CNSC

2024, ongoing until completion of process

CNSC application review process, including:

- Technical review
- Public consultation
- Public comments on draft EIS
- GFP revisions of draft EIS
- CNSC final decision on the Licence to
Prepare Site application
- Public comment



Public consultation and opportunities to comment occur at multiple stages throughout the CNSC review process. Details will be posted to www.cnsccsn.gc.ca

22:40 – Jordan Black, Licensing Director

OK, so to close things out, where are we next in our licensing journey?

I mentioned earlier that GFP submitted part 1 of our site prep licence application in June. And we're planning to submit part 2 of 2 to the CNSC in the first quarter of next year. As mentioned, in that submission, we will be including our draft environmental impact statement.

After submission, the CNSC will conduct a technical review of the materials. There will also be a public consultation process that will provide opportunities for review and feedback from members of the public. GFP will use that feedback to revise the environmental impact statement and resubmit a final version to the CNSC. That version of the EIS will be part of the final application to be considered by the Commission, the decision-making body at the CNSC, and we are estimating that they will hold public hearings on our application in late 2025 or early 2026.

This concludes the licensing update for the evening, so I'll turn it back to Annalisa.

Q&A



23:50 – MC: Annalisa Barnett, Communications Manager

Great. Thanks Jordan and thank you to all of our presenters. We'll move now to the Q&A And I'll just remind everyone: you should see a Q and A icon on the top bar of your screen. So just use that to enter any questions you might have. If we don't get to your question, please be sure to fill out our survey and enter your question there so we can provide you with a written response.

So with that, as we wait for some questions to come in, maybe we'll just start with some of the questions that we've been hearing in the community. So one of the ones that we've heard is just sort of curiosity about why the MMR is being built at the Chalk River site. So maybe, Jos, you could talk us through that to start with.

24:39 – Jos Dienia, President and CEO

Sure, thanks, Annalisa. So the Chalk River Laboratory, or CNL as we call it, Canadian Nuclear Laboratory—you'll find that in the nuclear industry, we love our acronyms.

But yeah, so, so they started an open bid process to host an SMR or an MMR on their site and they started that back in 2019. And so GFP has applied to that process and we've moved through that process and, for us, CNL is a great partner. It's really the birthplace of a lot of really state-of-the-art research in the nuclear industry.

And so us being close to that site or on that site, we're able to leverage a lot of the things that they have in place there. And so it's a great synergy for the two groups to be working together really close by.

25:27 – MC: Annalisa Barnett, Communications Manager

Great, thanks Jos. We've had a few questions come in now, so maybe I'll go there. So we had a question: Does the fuel use enriched uranium? Patrick, maybe you could take that one.

25:39 – Patrick Greer, Manager – Design Engineering

Yeah, absolutely, yes. So our fuel for the MMR does use enriched uranium. Now it can use actually multiple types or multiple enrichment levels for core design. So we will be starting out using low enriched uranium, or LEU plus, as it's known—again back to the acronym comment that Jos made—but there's also an option to use high assay, low enriched uranium in the future once supply becomes available.

26:21 – MC: Annalisa Barnett, Communications Manager

On that same note, we have a question: Will the fuel be manufactured in Canada?

26:27 – Patrick Greer, Manager – Design Engineering

So at this time, we're not anticipating that the fuel will be manufactured in Canada. It will be manufactured by USNC at their fuel fabrication facility in the United States.

26:21 – MC: Annalisa Barnett, Communications Manager

OK, thanks, Patrick. We have a question here about waste: How much waste will be produced annually? Patrick, can you speak to that one.

26:27 – Patrick Greer, Manager – Design Engineering

Yeah, so just I guess maybe speaking about our, our highest level of waste, which is really the fuel itself, there will be more waste than produced than with the previous design. This is obviously to be expected since we'll be getting three times more power out of the core and also the lifespan has been increased from 20 years to 40 years, as I spoke about earlier. But I'd say at a 40-year lifespan, based on our best estimates to date, we're looking somewhere in the neighbourhood of eight core loads depending, like I spoke about earlier, on that the type of fuel that's used. So that can vary with the enrichment levels. It also will vary with the demand on the MMR itself. So, again, when we talk about refueling, that will very much be dictated based off of usage.

So I guess maybe just to characterize things a little more, the volume of a core is approximately 14 meters cubed. So that's the equivalent of, say, a small SUV in size. And when we look at you know what's the comparable from a good volume comparison, although we're not generating electricity using coal in Ontario anymore, that's been phased out, but it does kind of give a good parallel from a waste volume perspective. So the generation of the equivalent amount of power from one core load, if you were to generate that using coal, you would end up with approximately 100,000 meters cubed of coal ash, which many people you know may not realize also contains trace amounts of radioactivity.

Another characterization, just in speaking with the public that's good to mention as well, and really speaks to our target market which is offsetting the use of diesel. So the equivalent of one reactor core load of energy being produced by a diesel generator, that would actually produce about 400,000 metric tons of CO₂.

So, again, one core load can go a very long way to offsetting greenhouse gases and it is a much smaller volume of waste byproduct.

29:46 – MC: Annalisa Barnett, Communications Manager

Great, thanks for that Patrick. Got one here: What is the status of the VDR process, or the vendor design review process? So maybe I'll ask Jordan to answer that one.

30:00 – Jordan Black, Licensing Director

Sure, happy to cover this one off. So the vendor design review process for those that aren't familiar is a service offered by the CNSC, the Canadian Nuclear Safety Commission, to potential vendors or vendors with secured projects like ours. So it's actually not a process that that GFP is engaged in.

We're a proponent, which means we are an applicant to be a future licensee looking to construct and operate a facility. VDR is actually limited to the vendors. However, what I can say is that Ultra Safe Nuclear Corporation, our lead vendor and the designer of the MMR, has engaged with the CNSC. They've been involved in the VDR process since the mid-2010s. I'm not sure of the exact year.

However, a number of years ago they completed what's known as phase one of VDR, and USNC is now engaging the CNSC and working through submissions related to phase two of VDR. And that work remains ongoing.

31:03 – MC: Annalisa Barnett, Communications Manager

OK, well, if we stay on the topic of schedule, we have a question here: What is the schedule to go from the licence to prepare site to licence to operate?

31:13 – Jordan Black, Licensing Director

OK, I can speak to that one too. I'll preface this by saying you know that the design is still underway. This is going to be a first-of-a-kind reactor, first-of-a-kind facility. And so all of this is, is to be taken really with a bit of a grain of salt as the design progresses along the way, and we work through these for our first project for the first time. In general, after a licence to prepare site application has been

submitted, it's roughly a two-year timeline for CNSC technical staff to do their review, to make requests for more information, for changes, to provide feedback to us as a as an applicant, and then to also go through that public consultation process.

So we expect once we've put in our full site prep licence application, probably about a two-year timeline before getting to a decision on whether or not we'd be allowed to move forward with the project.

The next step would be to submit a licence to construct application. And, again, that's somewhere between I'll say 24- to 32-month process. There's one project that's currently in that licensing phase in Canada, but it's the first one to go through that process in quite a number of years. And so we're keeping an eye on that to better understand the timelines and how to learn from any challenges that come up through that process.

The last licence we would need to begin operations is a licence to operate and we would anticipate that that again is roughly a two-year review at public consultation process after submission.

So we'll have more information, I think, in some of our upcoming town hall events that provides better granularity around when exactly we would submit each of these licence applications.

But at this point they're estimates, they're roughly two-year processes for each one, and that we anticipate we could move through that cycle and get to our operations in the late 2020s or before 2030, along those timelines.

33:26 – MC: Annalisa Barnett, Communications Manager

OK, great. Thanks Jordan. We have one here on cost impacts: So you seem to require new facilities now, especially fuel handling and storage. What are the major cost impacts of that? And Jos, could you speak to that one please?

33:44 – Jos Dening, President and CEO

Yeah, absolutely. So we get this question a lot related to this design pivot or design change and what is the impact to the overall business case. And really when you look at—we're tripling the size of the output. So we have three times the amount of energy that we're generating that we can provide to our customer. And so we have that additional revenue. And when you look at the extended life, the plan going from 20 to 40 years, we can provide that energy for a much longer period of time. Yes, there's increased capital costs at the start for these different facilities or you know somewhat larger facilities in some way. But when you look at the operating costs, the operating costs do not change significantly. So overall this design change has a net positive on the business case of the MMR.

34:28 – MC: Annalisa Barnett, Communications Manager

Perfect, thanks. And I think this is the last question from that same person: What is the source of enriched uranium now that Russian enriched uranium is no longer available?

34:40 – Jos Dening, President and CEO

Yeah, and so our original plan was to have our first core to be HALEU. And, as Patrick said, our reactor design can use either, so it can use LEU plus which is approximately a 9.9% enriched uranium or it can use HALEU which is a 19.9% enriched uranium.

So the United States government is spending significant effort trying to develop a domestic source, and by domestic I mean in North America source, of both those fuels.

And so we've been able to secure our first core of LEU plus for our reactor when it goes live. And then we expect that by the first refueling cycle that HALEU will be available in the United States of America and we'll be able to procure that fuel for future cores after that.

35:30 – MC: Annalisa Barnett, Communications Manager

OK. Also on the topic of fuel: There's a statement that the irradiated fuel will be moved to an interim site after removal. Can you describe the interim storage facilities? And maybe that's one for Patrick to take.

35:41 – Patrick Greer, Manager – Design Engineering

Yeah, absolutely. So again, this is a relatively recent development in the project planning. So we are in the process of developing specifics with our industry partners. But, really at a high level, the interim storage of fuel will be on site. In the medium term, we're looking to send it to a third party to be integrated with existing inventories. So, as many are aware, there are existing fuel inventories within the province at other operating facilities. So we're looking to integrate with one of those existing inventories to take advantage of some efficiencies there.

And really when it comes to the long term, like the other existing fuel inventories in Ontario, the spent fuel will be transferred to a facility that the nuclear waste management organization is looking to develop.

36:47 – MC: Annalisa Barnett, Communications Manager

OK, let's stay on that topic, and this is maybe for Jos and maybe Patrick as well: Can you describe the fuel in greater detail? What is the enrichment, what is the form, is it possible to recycle the fuel?

37:02 – Jos Dening, President and CEO

Yeah, absolutely. The fuel is, is really interesting. So, so I'm going to go on a bit of a technical deep dive on this one.

So our fuel starts as about a poppy seed size piece of uranium and then, like I said on my last comment there, it could be either LEU plus, which is you know, approximately 9.9% enriched or HALEU. So that that tiny piece of uranium, the poppy seed uranium goes through a process that turns it into TRISO fuel and that process is that piece of uranium being coated several times. And each one of those coatings acts as a pressure vessel. So it retains the fissile material.

And so TRISO fuel is a proven process. It's been used in reactors around the world for decades. And so the really unique differentiator that we have is we have something called the FCM—fully micro encapsulated ceramic fuel.

And so I've got a non-uranium kind of example here, and what it is, is it's 3D printed by USNC's proprietary process and it can be made in really, really specific shapes. And so we 3D print the shape, we put the TRISO fuel inside and then we seal the TRISO fuel in the FCM. And so that's another robust barrier right at the source, right at the fuel. And then that fuel is packed inside the reactor core, which we have another vessel. And so there's multiple barriers ensuring that the fissile material stays in.

Fueling intervals. We talked about refueling outages and we're very early on in the design, but we expect that outage to be about two weeks or 14 days. And our reactor is really like a nuclear battery. And so if you operate it at the full level at 45 megawatts, it'll last a certain time. And with LEU plus, we think that's approximately three years. At HALEU, it's double that because you have doubled the energy at the start, so it's six years.

If you operate that reactor at a lower output power, like we would potentially would at a remote community, the nuclear battery will just last longer. So your intervals between refueling can be 5,6,7,10 years, really depending on where you set that output at.

At this point we don't have any method to recycle the fuel, but that's something that we would look at potentially you know in in the future.

39:19 – MC: Annalisa Barnett, Communications Manager

Great. Thanks Jos. I can see we have a French question in the queue. So Kayla, could you read that one and answer it?

39:27 – Kaela Esseghaier, Project Director

Sure.

Quand vous parlez du projet fournissant de l'énergie "propre" ou à "faibles émissions", prenez-vous en compte l'ensemble du cycle de vie du projet, depuis l'extraction de l'uranium ? Merci bien pour cette question.

Lorsque nous parlons des émissions du projet, nous faisons référence à ce dont nous sommes responsables selon les termes de notre évaluation environnementale, car c'est là que se situe notre attention. Cela englobe tout sur le site du projet pendant toute la durée de vie du réacteur, jusqu'à ce que le site soit ramené à son état d'origine.

Cela n'inclut pas les émissions provenant des aspects du projet qui se trouvent en dehors du site du projet, mais il est très important de prendre en compte les émissions sur l'ensemble du cycle de vie.

Les émissions sur l'ensemble du cycle de vie de l'énergie nucléaire sont bien comprises et documentées par plusieurs organisations crédibles. Le Groupe d'experts intergouvernemental sur l'évolution du climat (GIEC), par exemple, est l'une de ces organisations, et dans son étude des émissions liées aux sources d'énergie, il a constaté que les sources nucléaires émettent une quantité similaire d'émissions à celles de l'énergie éolienne et seulement un tiers de ce qui est émis sur l'ensemble du cycle de vie de l'énergie solaire.

Je tiens à souligner que toutes les formes de production d'énergie émettent au moins certaines émissions au cours de leur cycle de vie, mais l'énergie éolienne, nucléaire et solaire figurent parmi les plus faibles.

41:22 – MC: Annalisa Barnett, Communications Manager

Thanks, Kayla. I see one here for environment, so I'm going to ask Jordan to answer this one: Does the environmental review process include in its assessment of impacts the risks associated with the short term above ground storage of high level radioactive waste or is this considered outside of the scope of the project?

41:43 – Jordan Black, Licensing Director

OK, thanks Annalisa. So the environmental review process covers the whole life cycle of our facility, so from site preparation and construction through operations and then decommissioning and abandonment. So as part of that process, we will be receiving new fuel, we will be loading that into the core, we will be offloading spent fuel and storing that, as mentioned, on an interim basis on our site. And all of those activities would be covered as part of the environmental assessment. We will include the movement of the fuel off of our site as part of the EA. However, as Patrick mentioned, we do plan to integrate our used fuel into larger inventories with other industry partners that are operating around the province right now. And once that integration is complete, that would be

considered the end of our project or our facility's operations. And so I don't really want to consider fuel as part of the EA beyond that scope. However, we would still cover decommissioning of the rest of the site after that transfer occurred.

42:56 – Patrick Greer, Manager – Design Engineering

And maybe if I could just add one additional element there, Jordan. So looking at the risks of storing used fuel on site, in our safety analysis, we do hazard analysis. So there is a very long comprehensive list of hazards that are considered for the site and the used fuel being on site would be characterized as one of those hazards. So that would be scrutinized very carefully and would be integrated into our safety analysis and then appropriately planned for and worked into the risk profile of the site.

43:40 – MC: Annalisa Barnett, Communications Manager

And while we are on the subject of the EA, we have another question here: Why was the CEAA 2012 chosen versus IAA 2019? So, Jordan, maybe you could talk about that.

43:54 – Jordan Black, Licensing Director

Sure. So, I'll say the, the easiest, most direct answer to that is that our project actually commenced before the Impact Assessment Act came into effect.

So one of the one of the principles in the IAA in the legislation that indicates clearly that any projects that were already underway and under evaluation under CEAA 2012 would consider—would continue to be considered—under that legislation

I will say though more practically speaking, the IAA also has different categorizations for projects that could be designated for assessment under the IAA, and the lowest threshold for power generation from nuclear facilities is actually 200 megawatts. So we would actually, as a project—had we come in and started the project later on, we would be below the lower threshold for megawatt generation under the IAA.

And while we could be designated by the Minister of Environment and Climate Change for assessment under the IAA as well, it also could be that an environmental assessment might be conducted through a different process and still managed by the Canadian Nuclear Safety Commission in accordance with the Nuclear Safety and Control Act. So the legislation in itself isn't clear that it would even apply to us. But, again, the shorter answer is that the project was already underway before the IAA came into effect.

45:24 – MC: Annalisa Barnett, Communications Manager

OK, maybe I'll shift gears here. I see there's a couple of questions around economic impact. So maybe I'll give this one to Kayla: What type and approximate number of jobs will this project create for Canadians during the construction phase and then during operations?

45:45 – Kaela Esseghaier, Project Director

Thanks, Annalisa. So for the construction phase, we anticipate around 50 to 80 tradespeople, at peak loading about 50 to 80, and this could translate to upwards of 250 jobs during the full construction life cycle. So there will be an opportunity to tap into local talent through direct hires and community relations, local subcontracting companies.

For the operations phase—just a note that the MMR is designed so that no human action is required—but there will be a team on site to monitor and validate the data. So the plan is for about 19 full-time equivalent positions, approximately 15 of which we'll be permanently at the station and a

minimum of two on shifts at any time. And for this we have a strong preference of hiring locally and we're working on plans to educate and develop young tradespeople for operator positions.

46:41 – MC: Annalisa Barnett, Communications Manager

Great, thanks Kayla. Coming back to environment, we have a question on decommissioning: So what is the decommissioning plan? For example, delayed decommissioning, prompt decommissioning, in situ decommissioning? Patrick, maybe you could take that one.

46:56 – Patrick Greer, Manager – Design Engineering

Yeah, absolutely. So decommissioning planning is actually done in multiple phases and it's actually done for each phase of the project. So right now we're in the licence to prepare site process. So we do have a preliminary decommissioning plan in place for the site preparation. So that's effectively all site activities that lead up to the building of the actual nuclear facility. So for that we would go into immediate decommissioning. So there would be—we would not be looking at any delay to that. There's really no benefit to it. So we've chosen immediate for the site preparation, and ultimately what that means is we would be restoring the site to its current form prior to commencing of the preparations.

Now, as we go through each of the next phases, when we get into construction and then ultimately through to operation where, you know, we've introduced nuclear hazards and there may be some decontamination requirements, effectively, we would be planning right now to go into a deferred decommissioning approach. That's our expectation right now. That may change as we continue our planning, but that's where we stand at the moment.

And, again, once we actually get to a decommissioning phase, we go from having a pre preliminary decommissioning plan to a detailed decommissioning plan that gets into significant amounts of detail in terms of how we're going to do that, the timelines, and all of the planning logistics that you would expect from a project like this.

49:02 – MC: Annalisa Barnett, Communications Manager

Great. Thanks, Patrick. So we have one here about first power date: So you said you're approximately six years to operation from today, puts you in 2028. Are you confident that the vendor can qualify the fuel for use in the MMR, set up manufacturing facilities to manufacture the fuel as well as structures per required manufacturing standards?

Jos, do you want to take that one?

49:31 – Jos Dening, President and CEO

Yeah. With any first-of-a-kind or first to market, there's challenges that we face and so we have a plan to have the fuel qualified and have it manufactured and ready for our first power. But that plan isn't without its challenges along the way. And so USNC already has created and built a fuel—a pilot fuel manufacturing facility, and that's where some of these original kind of test pieces of fuel were made. And they also recently announced a joint venture for the large-scale fuel manufacturing. And so we've got those first two steps well underway.

And the other part around the fuel testing is once the pilot fuel manufacturing facility completes their first set of fuel assemblies, those will actually be sent to two reactors to be tested. And so those tests are designed, the test reactors are booked, and so we have schedules for all that. And so the answer is yes we expect that to be ready by when we need it. But there's definitely first-of-a-kind challenges that we will encounter along the way.

50:41 – MC: Annalisa Barnett, Communications Manager

OK, and on a similar note: Have you identified EPC partners to construct the facilities, and if so, who?

50:49 – Jos Diening, President and CEO

Yeah, so we've got three partners that we are working with to both help with design and construction of this facility.

And so Hatch is one of our partners, Hyundai engineering corporation, and as well as PCL as our constructor. And then USNC is our owner but they're also a vendor of ours as they're doing the design. So those are the major subcontractors or partners that we have for the Chalk River project.

51:17 – MC: Annalisa Barnett, Communications Manager

Great, Thank you. I see a question here: Can you make the slides and recording from tonight available to participants?

Yes, they will be on the GFP Clean Energy site within a week. So yes, definitely.

OK. Back to the EA: Does the EA include the impacts of the project on Indigenous people's rights or does it only consider environmental impacts?

Jordan, do you want to talk about that one?

51:44 – Jordan Black, Licensing Director

Yes, I'm happy to. So yes, absolutely the environmental assessment does consider the potential impacts on Indigenous Nations and communities, land usage, their rights, their traditional practices, and it's something that GFP has taken seriously as we work to compose our draft EIS.

That starts with baseline environmental studies which does not just include local biology and western based science. It's also included consulting with Indigenous communities and knowledge keepers to understand some of the history of the land that we may not be aware of, that we may not have records of. And also to understand what their traditional practices are, their harvesting practices and how we can incorporate that knowledge and that experience into our environmental assessment, and do a better job of characterizing the potential impact on the environment, which includes those traditional activities and peoples that conducted those activities.

Another step in the process that we're currently undertaking is to then circle back with some of the communities that we've engaged with and validate that the information that they gave us has been correctly characterized and captured it right. And the issues or concerns that they've raised have been appropriately documented. And that they have an opportunity to provide us with feedback on proposed mitigation measures, opportunities that we may not have considered to better mitigate or monitor to validate that some of the assumptions we make in the environmental assessment are correct, those sorts of things.

Maybe a longer winded answer, but the short answer being that yes, it certainly does consider the impact on Indigenous people's rights and we're doing our best to work with some of the local communities to better understand their perspective and incorporate them in the EA.

53:47 – MC: Annalisa Barnett, Communications Manager

Great. Thanks, Jordan. Going back to operations, we talked a bit about, you know, the number of people who will be needed on site. This question is asking: Are you considering autonomous

operations sometime during the life cycle of the plant, which I think was an original goal to facilitate remote site installations in the future?

Patrick, do you want to answer that one?

54:11 – Patrick Greer, Manager – Design Engineering

Yeah, absolutely. So for the Chalk River site, we will not be using autonomous operations. So it is something that we are looking at for the longer term in terms of understanding—is it actually possible, is it safe to do? And figuring out what pieces of infant infrastructure we would need to put in place and in order to make that happen.

This obviously is something very new to the industry, never been done before. So I think it's going to be some time before we actually realize autonomous operations. But definitely something that's on our radar and it's something on the radar of the broader industry, as well looking at its feasibility and whether or not it's safe to do.

55:08 – MC: Annalisa Barnett, Communications Manager

OK. Also on operations, we have a question about the expected extent of the EPZ—emergency planning zone. Do you want to talk about that one too?

55:19 – Patrick Greer, Manager – Design Engineering

Yeah, so ultimately with the MMR being a low power density core, one of the benefits that that adds is also any impacts would be we closer to the core as well. So ultimately our emergency planning zone is—relative to say a large reactor—quite small.

So our intent is to fit within the emergency planning zone of the Chalk River site and get it ultimately as close to the site boundary as possible.

56:04 – MC: Annalisa Barnett, Communications Manager

OK, another question here on fuel: Will the fuel be qualified in a Canadian reactor? If not, where? Jos, can you take that one?

56:14 – Jos Dening, President and CEO

Yeah. So, like I said the fuel will be—the test fuel—will be manufactured at USNC's Oak Ridge pilot fuel manufacturing facility and it will not be tested in the Canadian reactor. But there's two reactors that are going to be used for their testing.

And I don't have the names, but one is located at MIT and then the other one is actually in Europe, in in Holland. And so those are the two test reactors that will be used for the fuel qualification testing.

56:40 – MC: Annalisa Barnett, Communications Manager

OK. I know we have a lot of OPG audience members on the call tonight and we have one here: Since OPG is part of this venture, will there be any secondment or rotational opportunities for current OPG employees?

56:56 – Jos Dening, President and CEO

Yeah, so out of our 40, so I'll answer that. So out of our 40 employees, there's a large portion that are seconded from both our owners. And so yes, there's opportunities for both USNC employees and OPG employees to be part of Global First power. So just reach out to our info@GlobalFirstPower website and then we can get back to you through there.

57:19 – MC: Annalisa Barnett, Communications Manager

OK, Thanks Jos. Oh, we've got another one here: Given that Indigenous cultures tend to have unique core values, does Global First Power plan to allow First Nations interested parties to participate in the development of a risk and hazard analysis process that reflects the values of their people?

Maybe I'll ask Jordan to take that one.

57:40 – Jordan Black, Licensing Director

Sure. So I'll say at a high level, there are certain requirements for risk and hazard analysis that we need to meet according to the RegDocs issued by the Canadian Nuclear Safety Commission. So there is a sort of structure that we're expected to follow and a requirement as we move through the licensing process through licence to construct and licence to operate, primarily.

However, I will say there's definitely an opportunity for involvement and input from Indigenous Nations and communities along the way, and we would welcome any input or feedback that could feed into this process.

We do conduct a lot of our engagement on a Nation to Nation basis and so I don't want to say across the board yes or no. I'll say that that's not something that's been raised to our team that I'm aware of yet through any of our ongoing engagements. But in fact if that comment came from any Indigenous Nations representatives that are on the call tonight, please and our next opportunity to chat about the project, please bring it up. We are open to how we could collaborate, and just because it's not something that's been done before doesn't mean it's not something that we could do going forward.

So I'm happy to chat offline with whoever put in that question and better understand how you'd like to participate and how we could work together on this.

59:07 – MC: Annalisa Barnett, Communications Manager

Let's stay on that topic. There's a question here: Any potential jobs for Indigenous workers? And have you considered using vendors from Indigenous suppliers? take that as well.

59:19 – Jordan Black, Licensing Director

Do you want me to take that one as well?

So, so I'll say yes, yes. I think it's something that is really important to us as a company and our values. One of our core values is community. We do want to support the local community, the general public and also the Indigenous Nations and communities whose traditional territories include where we are hoping to build this project. So we're looking for opportunities to engage with these suppliers. I'll say at this point, we haven't moved into to really widespread procurement activities for the project. But when we do, the inclusion of vendors and Indigenous suppliers will certainly be prioritized.

And I'd say even today we have started trying to build some of these connections and learn who's out there and who's able to provide different services. For example, we've had representatives in the community as recently as this summer attending some of the different Pow Wows that have happened throughout Ontario and we've been having some great conversations with potential suppliers that are interested in getting involved in our project. We're looking a little more looking to get involved at the right time when we move into more widespread procurement.

So we're very open to building this network now and learning who's out there and the services or work that can be provided. We look forward to engaging with some of these suppliers later on in the project

1:00:49 – MC: Annalisa Barnett, Communications Manager

Great. Thanks, Jordan. I see we have another French question. Kayla, could you read that one and then answer please?

1:00:56 – Kaela Esseghaier, Project Director

Sure. So the question says: Y aura-t-il des opportunités d'emploi sur le site ?

Merci bien pour cette question. Pour la phase de construction, nous anticipons une charge maximale d'environ 50 à 80 ouvriers spécialisés. Cela pourrait se traduire par plus de 250 emplois au cours de l'ensemble du cycle de construction.

Il y aura des opportunités de tirer parti des talents locaux grâce au recrutement direct, aux relations communautaires et aux entreprises de sous-traitance locales.

Pendant la phase opérationnelle, le MMR est conçu de manière à ce qu'aucune action humaine ne soit nécessaire, mais une équipe sur place surveillera et validera les données de démonstration. Le plan prévoit environ 19 postes équivalents temps plein, dont environ 15 seraient permanents à la station (avec un minimum de 2 en service à tout moment).

Nous avons une forte préférence pour l'embauche locale et nous travaillons sur des plans pour éduquer et former des jeunes ouvriers spécialisés pour des postes opérationnels.

1:01:49 – MC: Annalisa Barnett, Communications Manager

Thanks Kayla. OK here's another one: Are there any established guidelines yet on inspection or maintenance requirements for small scale nuclear PIP life cycle management, etc.?

Patrick, can you take that one?

1:02:27 – Patrick Greer, Manager – Design Engineering

Yeah, So that's actually a really good question. There is a, we'll say, a significant amount of work going on in the industry looking at establishing these guidelines, specifically tailored towards small modular reactors, but also just advanced reactor designs in general.

There are some unique features that they offer that's kind of changed the paradigm a little bit in terms of how we would apply the programs of the past, or the guidelines of the past.

So our team at GFP is actually very heavily involved, particularly in some of the teams being runs through the Canadian Standards Association, myself included. And ultimately what we're striving to do is look at our existing framework and a number of the lessons learned throughout the industry, apply those to these advanced technologies in a way that is tailored towards their anticipated operating conditions. And also make sure that we've got robust programs in place in order to make sure that as we are demonstrating some of these new technologies, we are being very cautious about collecting the information to make sure that we're getting the expected outcome that we're looking for.

So all that being said, there are a number of guidelines and standards and codes in existence today that can be applied. A number of them are risk informed approaches that can be applied, particularly to the design of the MMR. And where we may deviate or not be able to directly apply things that are in place and, you know, potentially mandated through regulation, there's a process that we will be going through in order to document what the alternative is and ensure that that is ultimately accepted by our regulator, the CNSC, so that we're ensuring that we've got the right activities happening at the right time for our plant, going forward.

1:05:04 – MC: Annalisa Barnett, Communications Manager

OK. I think I have another one here that would fall within your, sort of, wheelhouse: You mentioned using MIT for fuel qualification. The published results of MMR type fuel in the first such tests at MIT did not perform well. Do you have any comment on that?

1:05:21 – Patrick Greer, Manager – Design Engineering

Yeah. What I will say is some of the results that were obtained, through that test are being heavily scrutinized. There were a number of learnings that came out of that, particularly around the manufacturing process and ensuring that there's the right controls in place through that manufacturing process. So, again, this is one of the reasons why we do fuel qualification and we do these tests is to find those areas where improvements need to be made so that we're not learning those lessons when the reactor is actually constructed and running. So hopefully that answers the question.

These lessons have now been incorporated into the manufacturing process and future tests will be ensuring that those lessons learned have truly been nailed down and that the issues have been resolved.

1:06:32 – MC: Annalisa Barnett, Communications Manager

Great. Thanks Patrick. Staying on the topic of fuel, there's another question here: Are there any considerations made about the MMR using slightly enriched fuel, specifically in relation to Canada's nuclear non-proliferation commitment, understanding that enrichment facilities have the potential to contribute to nuclear proliferation? Would there be some requirement that USNC enrichment facilities are ensured not to contribute to nuclear weapons proliferation?

And Jordan, maybe, could you take that one?

1:07:06 – Jordan Black, Licensing Director

Happy to. So I think this is a bit of a two-part question. I'd say that the first bit about considering using slightly enriched fuel, I'll say at this time it's not something that's part of our facility's design and really that the reason has to do with energy density. You know many, many folks on this project, myself included, have spent time working in the CANDU nuclear energy industry and, yes, CANDU operates with natural uranium natural levels of enrichment and it's certainly technically feasible. But what I'll say is that the CANDU facilities are also larger, and take a lot more time to construct, and are more costly, and it's a different need than we have on a project like this, and the service that we're looking to provide in the remote markets in the future.

So I think using enriched fuel is a trade-off, and it's one that we think is valuable in providing this different product for a different market application. But I don't believe that the technology in itself—the scale of it would be viable using that enrichment. So that's sort of why it's important for us to move forward with a with an enriched fuel, just from a technical and economic point of view.

In terms of Canada's non-proliferation commitments, certainly we intend to continue to abide by those. It is part of the regulations put in place by the CNSV and part of the licensing process, and also something that Canada is accountable to the IAEA on—the International Atomic Energy Agency—as a signatory for the non-proliferation agreement.

So safeguards is part of all phases of licensing, starting right with site preparation, making plans for how to incorporate IAEA requirements into the facility, and how to interact with IAEA inspectors who do have a right to come and inspect the facility at any time, even during the site prep phase. And it's something that we will continue to take seriously and include in our licence to construct application

and licence to operate, and then part of GFP's operations going forward to make sure that there's no proliferation that could be attributed to our facility.

In terms of requirements for USNC's enrichment facilities, the partnerships that Jos spoke to earlier in the United States. I'll say it's a little bit more of a complex answer. First off, GFP will not be the only customer that USNC has and our ability to control all elements of the fuel supply chain might be limited. So for us to say that we could dictate that to USNC might be a stretch. However, I'll say that the USNC is equally committed to non-proliferation. TRISO fuel in itself is extremely robust from a safeguards perspective. It is—I'd say at this point I don't believe there's a there anyone who's devised a means that extract that fuel and use it for more nefarious purposes.

To Jos' question about future recycling being something we would like to look at—right now no one knows how to get it out of the TRISO particles or out of the FCM for that matter.

And I'll also say without being a licensing expert within the United States regulatory regime, I know that the US NRC does license facilities to perform very specific tasks. Facilities are allowed to license to enrich only to certain levels. They are licensed to possess different quantities of material enriched to different levels at limited amounts. And so there is a really strong regulatory program in place in the United States as well. And we have full confidence that the regulatory bodies and enforcement bodies in the United States will make sure that USNC's facilities are operating in accordance with their own licences.

So to, you know, to say that we would place that requirement is probably not correct, but we're fully confident that there will be a requirement and that USNC's facilities will not be contributing to proliferation either.


1:11:30 – MC: Annalisa Barnett, Communications Manager

Great. Thanks Jordan. We've just got a few minutes left here. So I think we just have time for one more question. I'm sorry to keep you talking, but it is an EA one again so this is going to be for you: Have any partnerships been made with First Nations to prepare any aspect of the EA or were efforts limited to seeking input and incorporating aspects of that input that work where possible?

1:11:56 – Jordan Black, Licensing Director

Happy to answer this one as well. I'll say upfront I don't really want to go into any specific details about our relationships with these Nations and communities. These are our personal conversations and I really feel comfortable sharing the specifics of who's provided what and who's helped or raised concerns in which manners. I don't think that's appropriate given that a lot of our conversations and the information that these communities share with us are done so in confidence.


But what I will say is that it's not just GFP soliciting input in strict manners. We're open to the conversations that the Nations wish to have. There are, I'll say, 30 or so Nations and communities that we have worked to engage with to date on this project, and we've seen different levels of engagement and different desires to be engaged with the different Nations and communities along the way. So, so it varies. There isn't just one, you know, 'sign here fill in this blank' sort of approach that we're taking. It's really on a Nation by Nation basis—who has the capacity to contribute? Who would like to contribute? How would they like to contribute? And how can we work together to produce a product that we can stand behind when we submit it to the regulator, and that we feel we're incorporating the best of our ability any of the value that these Nations can add to the process? So it's very case by case basis.



Thank you

Your feedback is important

To share your feedback virtually,
scan the QR code or visit
gfpcleanenergy.com and click
"Share comments."



1:13:39 – MC: Annalisa Barnett, Communications Manager

Great. Thanks Jordan. Well, that takes us to the end of our time. Thank you to our presenters and to everyone for joining us tonight. We appreciate you taking the time to engage with us. We will plan more sessions for 2024, both virtual and in person. So please sign up for our e-mail list if you would like to be kept in the loop on when those will happen. Until then, thanks again and have a wonderful evening.